AESS International Operations

Dr. William Lyons

International Operations - Australia

Pilot-less plane comp launched

The UAV competition was launched by Premier Peter Beattie at the Gabba.

Avionics

A MAJOR competition to build and demonstrate autonomous (pilot-less) aircraft has been launched in Brisbane by Queensland Premier Peter Beattie.

Participants in the inaugural UAV (Unmanned Aerial Vehicle) Outback Rescue Challenge will compete for $40,000 in prizes, by designing and building a UAV that can successfully undertake a task that will demonstrate its ability to take off, land, navigate and manoeuvre.

The task is to fly from Kingaroy airport to a remote location, deliver vital medical supplies to a farmer, and return to base – all with no human intervention.

The Brisbane-based Australian Research Centre for Aerospace Automation (ARCAA), in association with the Queensland University of Technology and CSIRO, will host the UAV Outback Rescue Challenge at Kingaroy Airport in September 2007.

The competition has the backing of the Queensland Government, Boeing Australia Limited and the US-based Association for Unmanned Vehicle Systems International (AUVSI).

ARCAA director and QUT Associate Professor Rod Walker said the challenge aimed to promote interest in an industry which has been hailed "the next big thing for Queensland".

"The challenge's theme of outback rescue was designed to highlight UAVs' many potential benefits to ordinary Australians with an example of how they could become 'flying pharmacies' and save lives by quickly and cheaply delivering medical supplies to critically ill patients," he said.

"Most of all we want students and researchers to learn about this exciting area of the aerospace industry and, perhaps, see the foundation for their future careers."

The challenge has two categories: 1) University students or hobbyists - $40,000 first prize 2)Queensland high school students - $10,000 first prize. Visit www.outbackchallenge.com.au.

Annual Report

- Supported high profile UAV Challenge activity in Queensland Australia
  - See www.uavoutbackchallenge.com.au
  - Many entries backed from Industry to encourage engineering students
  - “Sponsorship” and $5K for UMR entry
  - Enthusiastic entries from high schools and universities
  - $60K of funding from AUVSI, CSIRO, Boeing, QLD Government
  - Seeking $25K from AESS for annual event plus $5K reserve for an application from UMR
    - **Will propose motion for BoG to authorize funding**
  - Report to appear in Systems Magazine
- Program of guest lectures at Queensland University and Queensland University of Technology for Systems Engineering (Boeing, Raytheon, IEEE fellows)
- Progress toward additional AESS Chapter
  - 10 of 12 required signatures
- Propose AESS BoG meeting in 2009 (in conjunction with ITSC conference)

UAV Outback Challenge

Search is on as robot aircraft battle to find 'Outback Joe'

Steve Creedy
Innovation

KINGAROY, in Queensland, will become a focal point for a new generation of aerospace engineers next month, when it plays host to a major competition designed to highlight civilian uses of unmanned aerial vehicles.

The nation's first UAV Challenge hopes to convince Australians to push beyond the perception that pilotless vehicles are simply unmanned killing machines and recognise the range of civilian missions in which they can be put to use.

Organised by the Australian Research Centre for Aerospace Automation, it is believed to be one of the richest UAV competitions in the world, offering a total prize pool of $60,000, including a $40,000 first prize.

ARCAA is a joint venture between CSIRO and Queensland University of Technology to promote civilian research into developing UAVs.

It is particularly focused on ways technology developed for military use can be adapted.

ARCAA's airborne avionics research group head, Associate Professor Rod Walker, believes it is a form of robotics that many will be interested in.

"So in that perspective it's breaking new frontiers," he said.

Professor Walker said the existence of big industries in remote parts of Australia and the vast distances that needed crossing, had made aviation an important part of life.

"So if we can provide aviation services at the fraction of the cost they currently are or more automated aviation services, then we think it's got the potential to have a big impact," he said.

To generate public goodwill, the challenge will highlight search and rescue uses for which UAVs are well suited.

more of them working in some sort of networked manner."

In the schools section, the

Students given $60,000 incentive to design, build and fly pilotless aircraft

There are thousands in the sky—small, fuel efficient, pilotless planes, used for everything from military spying to weather-forecasting (see box). And, if a competition announced last week by Queensland premier Peter Beattie has the desired effect, there could be thousands more. Mr Beattie announced $60,000 in prizes for the first competition of its kind in Australia to design, build and fly pilotless aircrafts. The competition, under the auspices of the Australian Research Centre for Aerospace Automation, is aimed at developing a vehicle for dropping for emergency services in outback areas, and is open to secondary and university students, as well as hobbyists and film makers.

Competitors will have to design and build a UAV (pilotless aircraft), and put it through its paces in a hypothetical course that will involve dropping off emergency medical supplies to people lost in the bush.

"While this technology is already used in defence, we are only just starting to explore its everyday potential," Mr Beattie said. "For example, UAVs could be used in cyclone search and rescue operations, in crop management, or as part of coastal warning systems.

The aim of the competition is to raise awareness of pilotless aircraft technology.

The competition will be held at a special UAV test area at Kingaroy Airport from September 24-27. There are three categories: for Queensland high schools; university students and others; and a prize for the best documentary about a team preparing for the Outback Challenge. Queensland is already a leader in the field, with 30% of the Australian industry based in the Sunshine State. "UAVs are the fastest growing segment in the international aerospace industry, and I see a day in the not-too-distant future when these craft routinely fly our skies," said the Premier. "They will be used in traffic and road control, power line maintenance, fisheries and wildlife surveillance, monitoring reef health, a whole range of agricultural uses including stock monitoring, as well as aerial photography, fighting bush fires and crime."

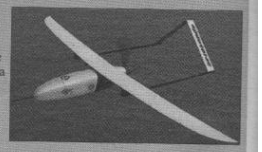
The Australian Research Centre for Aerospace Automation is a collaboration between the CSIRO and Queensland University of Technology and it promotes civilian research into the development and commercialisation of UAVs.

The centre has projected its UAV research could be worth $543 million to the Queensland economy in the next 10 years.

Olav Muurlink

Pilotless...but not pointless

On one end of the scale are what are called micro air vehicle (MAV) which in time to come are expected to have more in common with insects than planes—and already pilotless remotely controlled aircraft of 15 centimetres or less in diameter are in the air. But more commonly, pilotless planes can be characterised by the little ten-foot wingspan model that appeared on the blue at South Uist in remote Scotland. The Laima (pictured) was guided by satellite, and took off from a car roof in Newfoundland on the other side fo the Atlantic, and flew, without human monitoring or correction, across one of the great oceans of the world at an average speed of over 100 kmh. The most remarkable thing about the flight, perhaps, was that the plane, sponsored by weather services in Australia, Canada, Taiwan, Canada and the US, used less than 10 litres of fuel. In its 1800 km flight, the Laima, took much the same route giants of the skies such as the Jumbo 747 would take—but without the human risk and the enormous environmental cost.



The other end of the scale: not all pilotless planes are small. Northrop Grumman's Global Hawk, a pilotless spy plane, boasts a wing span similar to a Boeing 737. The Hawk is being used in Iraq and Afghanistan to detect insurgent movements from altitudes as high as 65,000 feet.

The human cost of using piloted planes cannot be underestimated. Nearly 150 pilots and aircrew have been killed in the last four decades in the US alone hunting wildfires. An aircraft developed jointly by NASA and General Atomics Aeronautical Systems, and fitted with thermal imaging equipment and a satellite link, the Altus II is acting as a spotter in the skies.

There have been solar powered pilotless planes, such as the Helios, which in 2001 set a new altitude record for non-rocket powered aircraft, and on the other end of the scale, the thirsty and huge Global Hawk, on patrol over Afghanistan, hunting insurgents.

Progress on QLD Chapter Formation

An Aerospace and Electronics Systems Chapter for Queensland?

IEEE Queensland Section (ARBN: 078576495)

The Queensland Section of the IEEE, with the support of the Australian Research Centre for Aerospace Automation (ARCAA), is working towards establishing an IEEE Aerospace and Electronic Systems Society (AESS) Chapter in Queensland.

The IEEE, a non-profit organization, is the world's leading professional association for the advancement of technology. The AESS is a society for those interested in design, integration, test, and analysis of large, complex systems consisting of major subsystems that contain dissimilar electronic devices. The AESS has a particular focus on aerospace systems but also incorporates total integrated electronic systems in a range of vehicular and robotic systems (including space and undersea) and their enabling technologies.

More information about the IEEE and the AESS may be found at:
http://www.ieee.org/web/aboutus/home/index.html
http://www.ewh.ieee.org/soc/aes/

An opportunity exists to create a local AESS chapter in Queensland. Having an AESS chapter in Queensland is highly appropriate given that the region is becoming an important hub for the aerospace industry and research organisations in Australia. Queensland also has a substantial presence in electronic systems research and development hosting several leading universities and research organisations and many small-to-medium-sized enterprises.

The Chapter would be ideally placed to provide a forum through which those involved in aerospace and electronic systems research and development could interact and share knowledge and experience. This would be facilitated through a range of events of a social and/or technical nature. Technical events could include presentations, seminars, workshops, symposia or conferences on topics of interest to members including:

- UAVs, UAS and Aerial robots,
- C3 systems;
- energy conversion;
- intelligent systems;
- navigation and tracking systems;
- radar;
- robotics;
- simulations and instrumentation;
- sonar and undersea systems;
- space systems;
- automatic test systems;
- vehicular systems; and
- modular integrated electronics.

To make an AESS chapter in Queensland successful the support of engineers and technical professionals from industry, research, government and special interest sectors is greatly needed. The IEEE Queensland Section and ARCAA invites all those interested to consider membership in the IEEE Aerospace and Electronic Systems Society.

IEEE Benefits include:

- A bringing-together of engineering knowledge, the profession and the community through local events year-round
- Publications/magazines/ newsletters containing articles discussing state-of-the-art technology from around the world
- Access to member services

A list of membership benefits may be found at:
http://www.ieee.org/web/membership/benefits/index.html

An IEEE AESS presence in Queensland would also help foster local interest in the engineering profession in Queensland high-schools and universities. This is a key factor in the continual provision of a large pool of talented engineers and scientists to meet the employment demands of the high-tech sectors of industry and research.

Please visit the IEEE website if you wish to become a member.
http://www.ieee.org/web/membership/home/index.html

Membership prices for IEEE and AESS are $64 US and $13 US respectively if you join before August 15th 2007. Contact Robert Ellen of the IEEE Queensland Section or Dr Luis Gonzalez of ARCAA if you require further information.

Thank you for your support.

Mr Robert Ellen
AESS Qld Chapter Petition Organiser

e-mail: rellen@ieee.org
Mob: 0409 261 470

Dr Luis Felipe Gonzalez
Lecturer - ARCAA
Queensland University of Technology
e-mail: l.gonzalez@qut.edu.au
Ph: 07 3138 1363